CyberData



Operations Guide for the 4-Port PoweredUSB 2.0 Hub

with Serial Ports and External Power Supply

Part #010845

CyberData Corporation
2555 Garden Road
Monterey, CA 93940
(831) 373-2601

930105B

Operations Guide for the 4-Port PoweredUSB 2.0 Hub 930105B
with External Power Supply 010845

COPYRIGHT NOTICE:
© 2008, CyberData Corporation, ALL RIGHTS RESERVED.

This manual and related materials are the copyrighted property of CyberData Corporation. No part of this manual or related materials may be reproduced or transmitted, in any form or by any means (except for internal use by licensed customers), without prior express written permission of CyberData Corporation. This manual, and the products, software, firmware, and/or hardware described in this manual are the property of CyberData Corporation, provided under the terms of an agreement between CyberData Corporation and recipient of this manual, and their use is subject to that agreement and its terms.

DISCLAIMER: Except as expressly and specifically stated in a written agreement executed by CyberData Corporation, CyberData Corporation makes no representation or warranty, express or implied, including any warranty or merchantability or fitness for any purpose, with respect to this manual or the products, software, firmware, and/or hardware described herein, and CyberData Corporation assumes no liability for damages or claims resulting from any use of this manual or such products, software, firmware, and/or hardware. CyberData Corporation reserves the right to make changes, without notice, to this manual and to any such product, software, firmware, and/or hardware.

OPEN SOURCE STATEMENT: Certain software components included in CyberData products are subject to the GNU General Public License (GPL) and Lesser GNU General Public License (LGPL) “open source” or “free software” licenses. Some of this Open Source Software may be owned by third parties. Open Source Software is not subject to the terms and conditions of the CyberData COPYRIGHT NOTICE or software licenses. Your right to copy, modify, and distribute any Open Source Software is determined by the terms of the GPL, LGPL, or third party, according to who licenses that software.

Software or firmware developed by CyberData that is unrelated to Open Source Software is copyrighted by CyberData, subject to the terms of CyberData licenses, and may not be copied, modified, reverse-engineered, or otherwise altered without explicit written permission from CyberData Corporation.

TRADEMARK NOTICE: CyberData Corporation and the CyberData Corporation logos are trademarks of CyberData Corporation. Other product names, trademarks, and service marks may be the trademarks or registered trademarks of their respective owners.

CyberData

Phone: (831) 373-2601
Technical Support Ext. 333
support@cyberdata.net
Fax: (831) 373-4193
Company and product information at www.cyberdata.net

Contents

1 Product overview

The CyberData 4-Port PoweredUSB 2.0 Hub provides a simple, affordable way to add up to four PoweredUSB ports to your PC. These additional ports are controlled by the PC's Standby and Wake commands. This add-on Hub makes it easy to connect the PC to devices that require more than the 500mA of +5 volts supplied with the standard USB interface.



Product features

- 4 PoweredUSB ports
- One +24 volt up to 2.3A
- Three +12 volt up to 1.5A each
- Short circuit and over current protected
- Multiple power supply options
- Plug-n-Play installation
- Peripheral power controlled by PC stand-by and wake commands
- LED indicators for port power output and USB 2.0 status
- Two-year warranty

License note

The PoweredUSB controller board contains certain technology that is covered by an IBM® patent. CyberData Corporation is licensed with IBM to manufacture, and to sell or lease products that incorporate this technology. This license also permits other entities to resell or release these Cyberdata products after they have been purchased from CyberData.

Documentation note

The documentation for this product is released in an English language version only.

Contact CyberData

CyberData Corporation
2555 Garden Road
Monterey, CA 93940
USA
www.cyberdata.net
Voicemail: 831-373-2601
Fax: 831-373-4193

Contact Sales

Sales (831) 373-2601 Extension 334

Contact Technical Support

Phone: 831-373-2601 Extension 333
Email: support@cyberdata.net
Product support page: http://www.cyberdata.net/support/4port20hub/

Purchase cables and connectors

For additional information about PoweredUSB cables and connectors, go to:
http://www.cyberdata.net/products/poweredusb/pusbcables.html

Warranty

CyberData warrants its product against defects in material or workmanship for a period of two years from the date of purchase. Should the product fail within the warranty period, CyberData will repair or replace the product free of charge. This warranty includes all parts and labor.

Should the product fail out-of-warranty, a flat rate repair charge of one half the product purchase price will be assessed. Repair costs for products that are in warranty, but damaged by improper modifications or abuse, will be charged at the out-of-warranty rate. Products returned to CyberData, both in and out-of-warranty, are shipped to CyberData at the expense of the customer. Charges for shipping repaired products back to the customer will be paid by CyberData.

Contact Service

If service is required, contact the CyberData Returned Materials Authorization (RMA) department at (831) 373-2601 Extension 136.

When returning a product to CyberData, an approved CyberData RMA number must be printed on the outside of the original shipping package. No product will be accepted for return without an approved RMA number. Send the product, in its original package, to the following address:

CyberData Corporation
2555 Garden Road
Monterey, CA 93940
Attention: RMA “your RMA number”

2 Installing and Using the 4-Port PoweredUSB Hub

This chapter provides the instructions, illustrations, and background information you need to install, and begin working with the CyberData 4-Port PoweredUSB 2.0 Hub with Serial Ports.



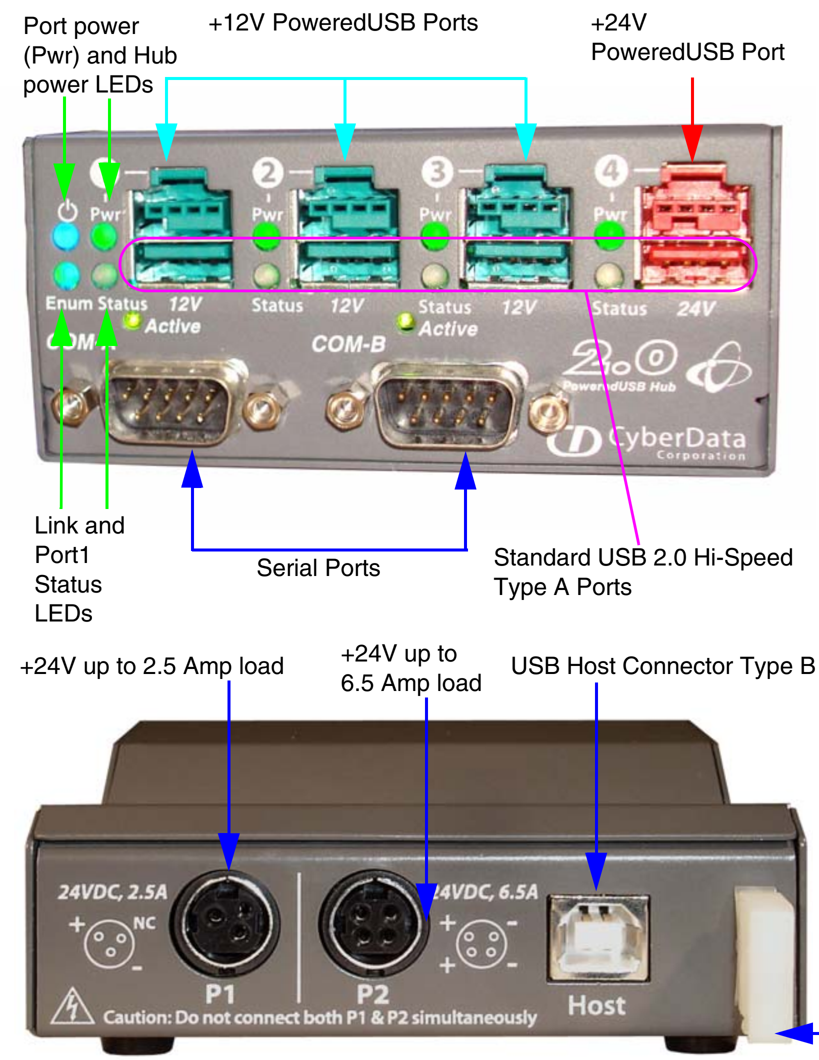
2.1 Product Components List

The PoweredUSB Hub package includes these parts:

- (1) CyberData 4-Port PoweredUSB 2.0 Hub
- Power Supply, 24VDC, Desk-top, 4-Pin Hosiden style plug
- (1) Accessory Kit
  - (1) Short USB 2.0 Hi-Speed host cable
  - (1) Host USB cable strain relief clamp

- (1) *Operations Guide for the 4-Port PoweredUSB 2.0 Hub with Serial Ports*

Component identification: external front and back views



- In GREEN Disabled Mode, when 24V power is applied with no host plugged in, the Hub Power LED (Blue) is and all four port Power LEDs turn on. The Host Link (connection) LED WILL NOT light.
- In GREEN Mode, when 24V power is applied with no host plugged in, the Hub Power LED (Blue) is on, the 4 port Power LEDs and the Host Link (connection) LED DO NOT light.
- Connect a standard USB 2.0 cable from host PC to Host connector on back of hub with 24V power connected and all four top Port Power LEDs light and turn on green sequentially and the host (connection) Link LED connector turns on green.
- When a peripheral is plugged into the enumerated hub; into one of the hub ports; and the peripheral enumerates in the OS, the Status Led for that Port will light and turn green
- On a peripheral load error on any port, the Status LED turns orange and 24V power to the upper portion of the connector is turned off until the hub is restarted.

Figure 2-1. Product Compatibility

The CyberData 4-Port PoweredUSB 2.0 Hub is compatible with the following operating systems and USB standards.

Operating systems	USB
Windows 2000 and XP	2.0 Standard
LINUX	PoweredUSB 0.8g
Mac OS-X	

2.2 Installation

The CyberData 4-Port PoweredUSB 2.0 Hub is a tabletop unit with mounting feet that sit on a flat surface.

2.3 Connections

This following topics provide illustrations and information on connecting the CyberData 4-Port PoweredUSB 2.0 Hub to power supplies, the host, and peripheral devices.

2.3.1 Power supply

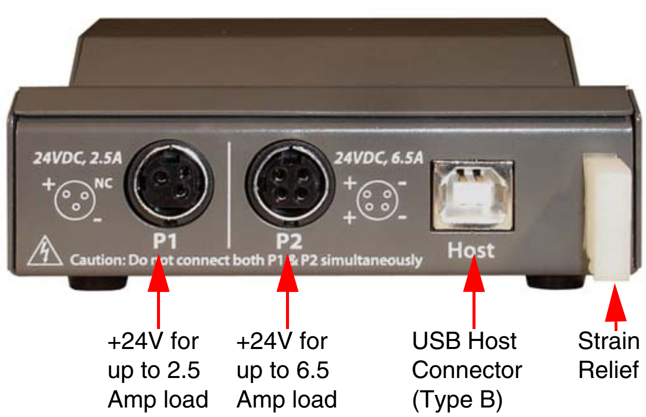
The PoweredUSB specification requires supplying +24V at 2.3A and +12V at 1.5A to each voltage designated port. These requirements are met only if the power supply has sufficient wattage for this amount of power.

The Epson PS180 brick and Dell printer power supply are examples of lower-cost alternate power supplies that can be used with this Hub and peripherals requiring less power. Two power plug receptacles are provided on the back of the CyberData 4-Port PoweredUSB 2.0 Hub to facilitate the use of alternate power supplies.

The three-pin connector is normally used for the Dell and Epson Bricks. The four-pin connector is used for a high-current power supply. See "Figure 2-7"on page 9 for an illustration of cable routing from the CyberData 4-Port PoweredUSB 2.0 Hub.

CAUTION The **P1** and **P2** DC input jacks on the back of this Hub are for *input only*. Do *not* plug power supplies into both input jacks simultaneously as equipment damage that might void the product warranty could occur.

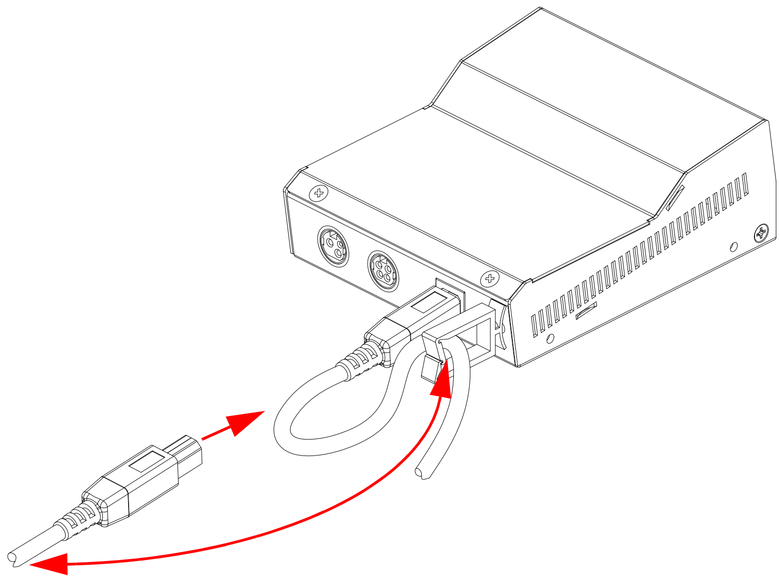
Figure 2-2. Power Connectors—Back View



2.3.2 Host connector

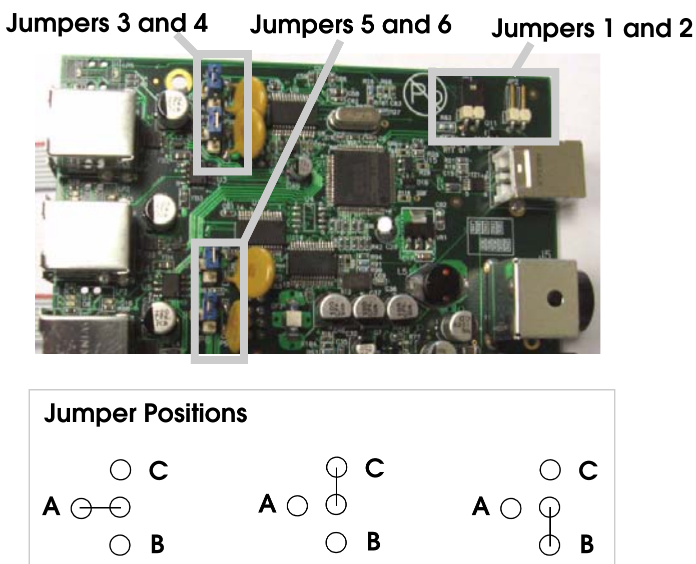
The connection to the host computer is achieved via a standard USB 2.0 certified Hi-Speed "A" to "B" cable that is included in the Accessory Kit, or with any equivalent USB 2.0 certified Hi-Speed cable. Refer to Section 2.1, "Product Components List" for information about the Accessory Kit.

Figure 2-3. Host Connector with Strain Relief



2.3.3 Jumpers

Figure 2-4. Jumpers



Jumper Table		A	B	C
Com Port A, Pin 1	JP3	12V	5V	CD
Com Port A, Pin 9	JP4	12V	5V	RI
Com Port B, Pin 1	JP5	12V	5V	CD
Com Port B, Pin 9	JP6	12V	5V	RI

2.3.4 PoweredUSB connections

The PoweredUSB connections are standard USB "A" connectors with four extra pins to supply higher voltages. See "Figure 2-6"on page 8 for an illustration. The lower portion of the "A" connector side on this product can be used alone, without the locking PoweredUSB connector.

2.3.5 Connector color keys

The PoweredUSB connectors are color keyed so that *only* the correct voltage cables can be installed.

Figure 2-5. Color-coding for Connectors

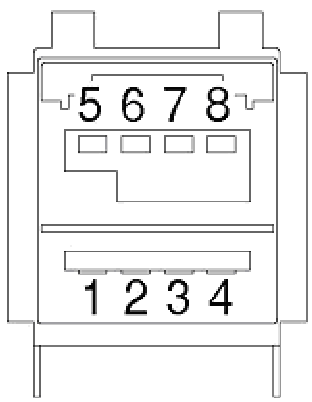
Teal | Red



12 Volt Keyed
1.5A each
Ports 1,2, and 3

24 Volt Keyed
2.3A
Ports 4

Figure 2-6. USB PoweredUSB Socket Connector Pin Assignments

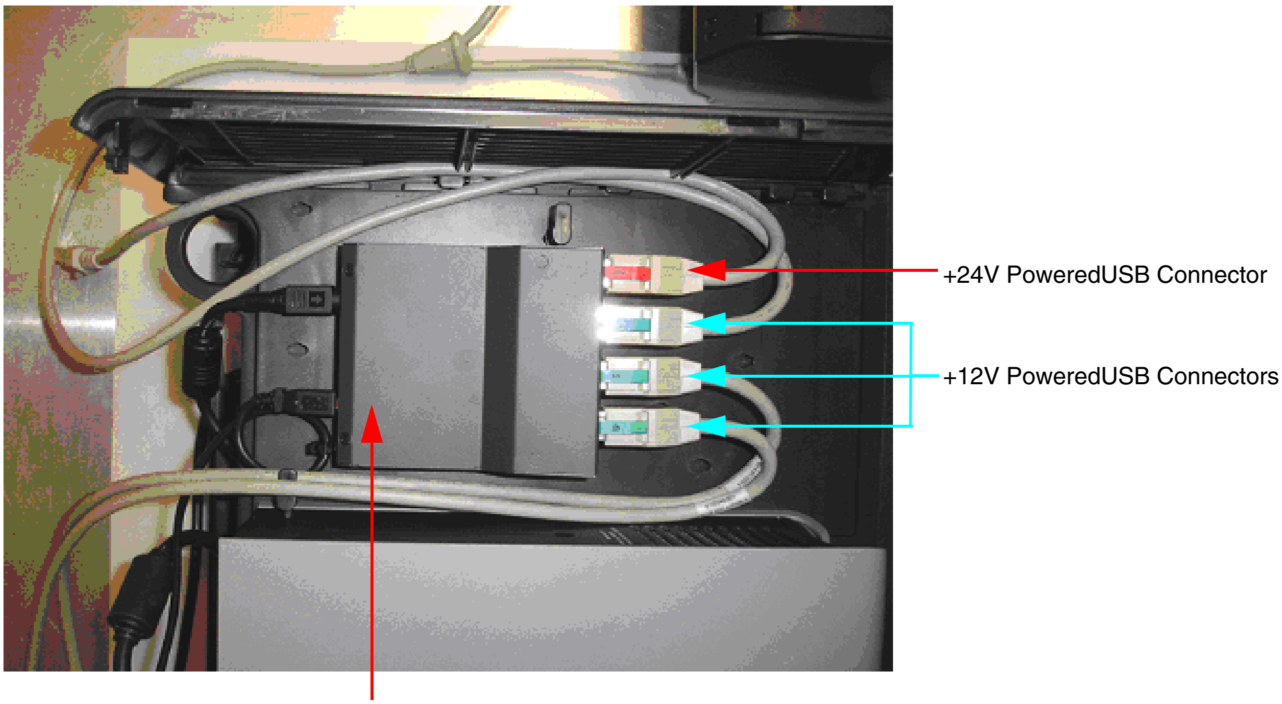


PIN OUT		
Pin	**Signal Description**	
1	Vbus	USB standard “A”
2	D-	USB standard “A”
3	D+	USB standard “A”
4	Ground	USB standard “A”
5	Ground	USB PlusPower
6	Vplus	USB PlusPower
7	Vplus	USB PlusPower
8	Ground	USB PlusPower
Shell	Shield	

2.3.6 Peripherals connections to the CyberData 4-Port PoweredUSB 2.0 Hub

This figure illustrates the cable routing from the CyberData 4-Port PoweredUSB 2.0 Hub to the Dell Retail Integrator.

Figure 2-7. Top view of Hub PoweredUSB cable routing



2.3.7 Peripheral cable connection options

Figures 10 through 16 provide examples of peripheral cable combinations and connection options for the CyberData 4-Port PoweredUSB 2.0 Hub. The following table provides details about the CyberData PoweredUSB Cables displayed in these figures.

PoweredUSB cable sources

Custom cables of different lengths and colors can be purchased from CyberData as follows:

- Via email: sales@cyberdata.net
- Via phone: Sales (831) 373-2601 Extension 334

CyberData PoweredUSB Cables		
Figure	**PoweredUSB Cable Description**	**CyberData Part Number**
"Figure 2-8"on page 10	12V to 2x4	010693C
"Figure 2-9"on page 10	12V to 12V Power Jack	Contact CyberData
"Figure 2-10"on page 11	24V PoweredUSB to 3-Pin Power Mini-DIN	010631A

CyberData PoweredUSB Cables		
Figure	**PoweredUSB Cable Description**	**CyberData Part Number**
”Figure 2-11”on page 11	24V to “Y” Cable 3-Pin Power Mini-DIN to USB “B”	010714A
”Figure 2-12”on page 12	12V to “Y” Cable, RS232 and Power Jack	010763
”Figure 2-13”on page 12	24V to 1x8	010617A
”Figure 2-14”on page 12	24V to “Y” Cable, RS232 and Power Jack	

Figure 2-8. Cable, +12V PoweredUSB to 2x4 PoweredUSB

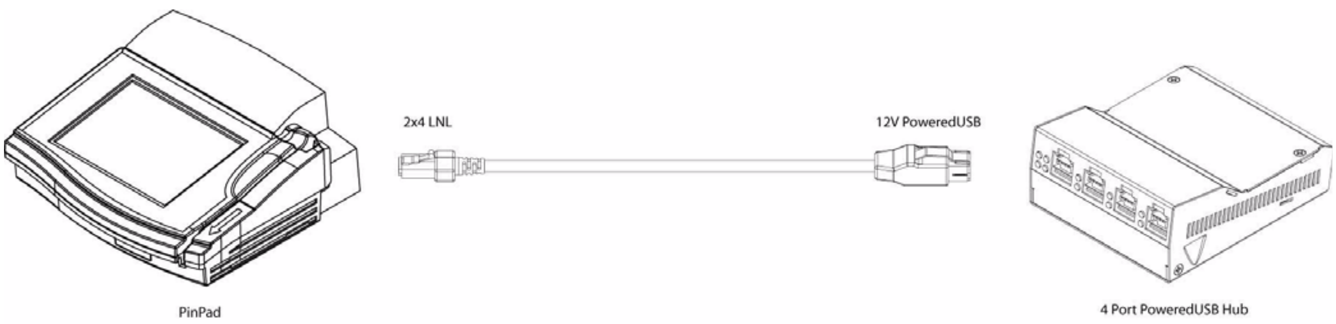


Figure 2-9. Cables; +12V PoweredUSB to +12V Power Jack and RS-232 to RS-232

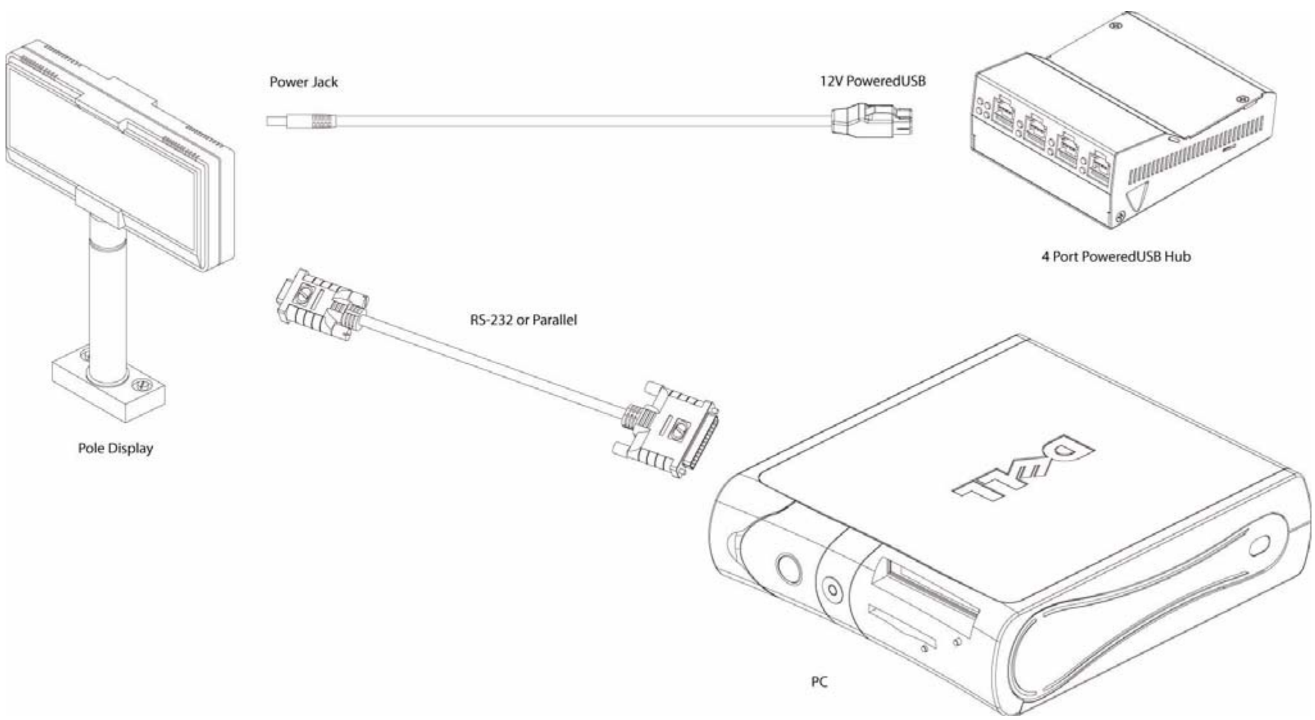


Figure 2-10. Cables; +24V PoweredUSB to 3-Pin Mini-DIN and RS-232 to RS-232 or Parallel to Parallel

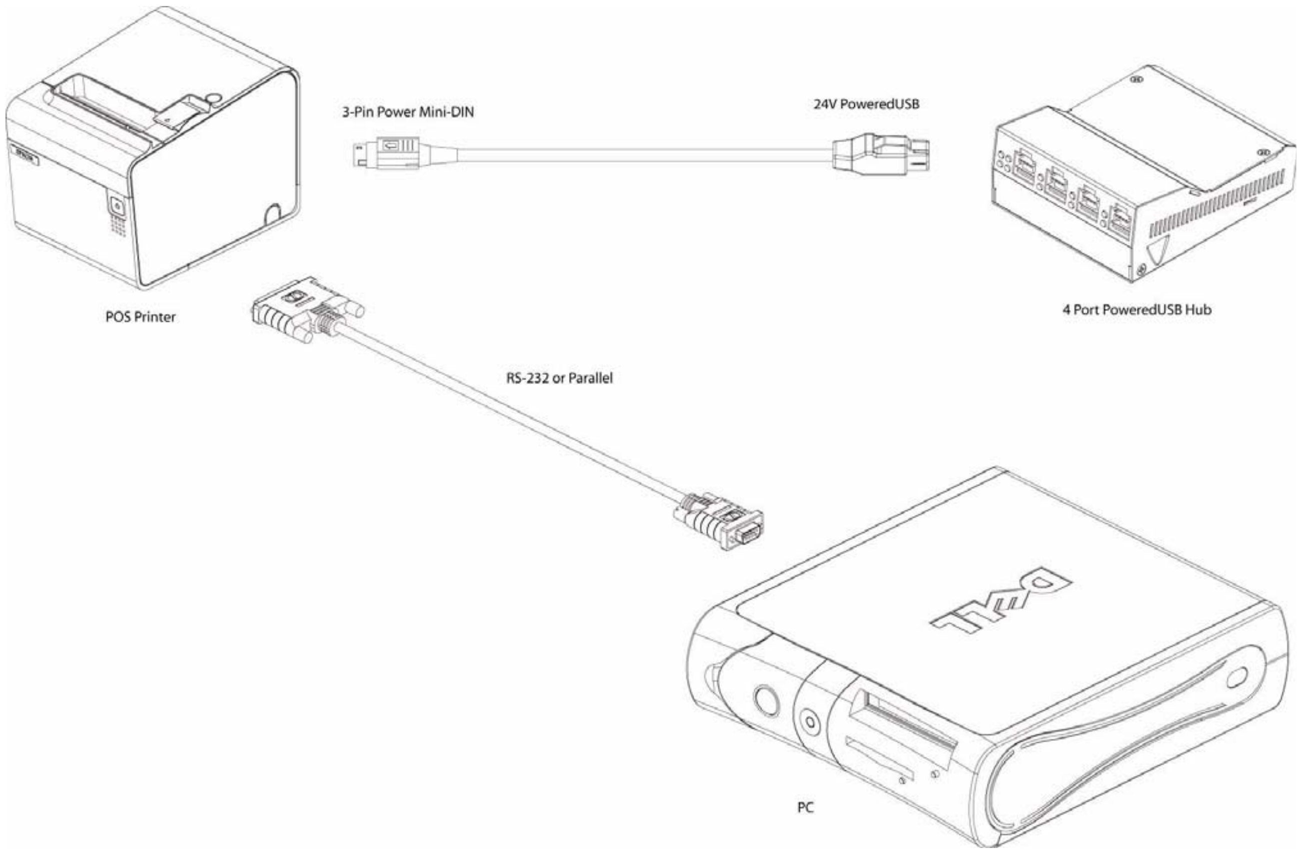


Figure 2-11. "Y" Cable, +24V PoweredUSB to 3-Pin Power Mini-DIN and USB "B" Connectors

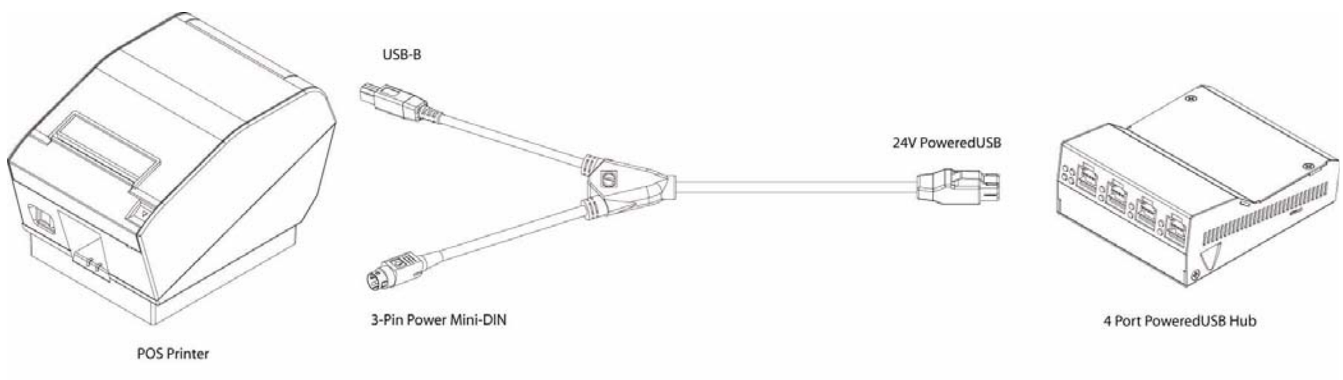


Figure 2-12. RS232 to USB Converter “Y” Cable +12V (PC Enumerates this device as an RS-232 COM port)

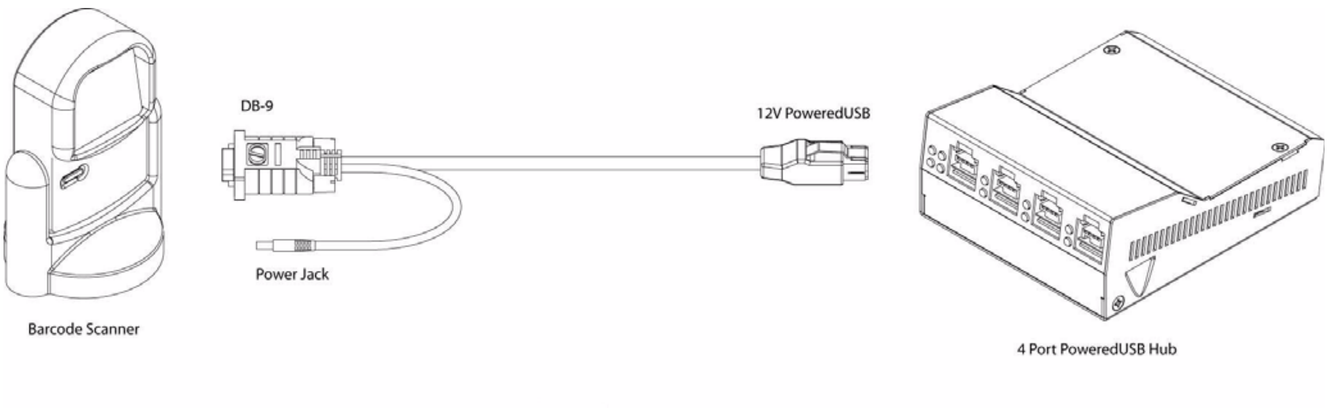


Figure 2-13. Cable, +24V PoweredUSB to 1x8 PoweredUSB

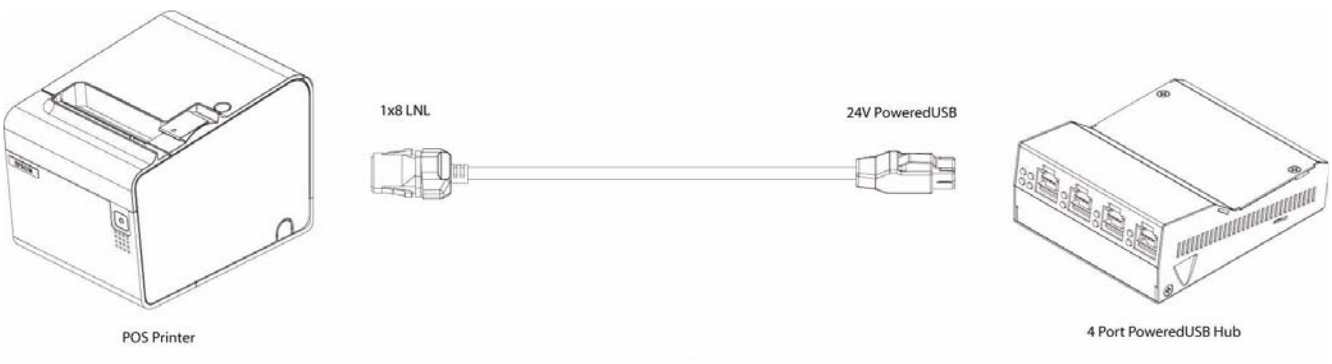
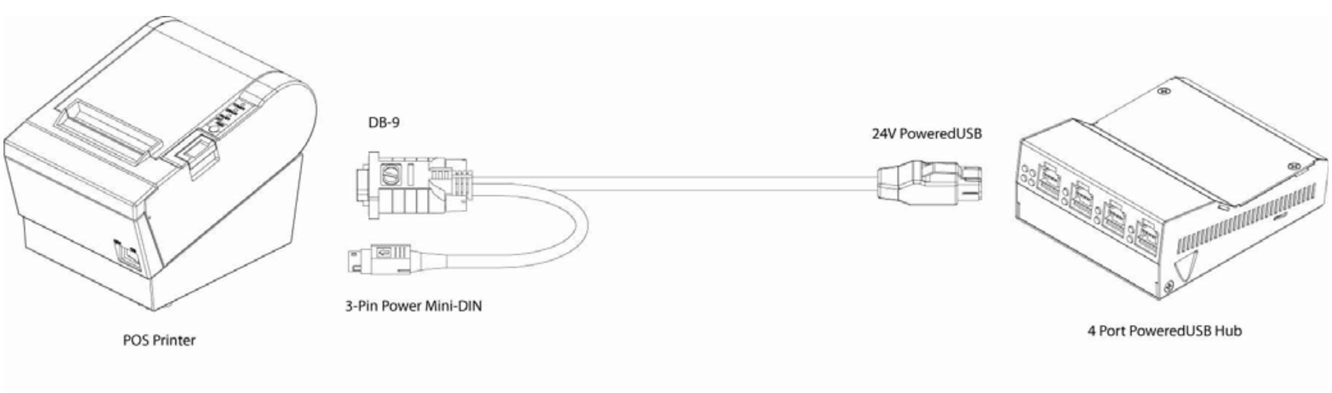


Figure 2-14. RS232 to USB Converter “Y” Cable +24V



2.4 Operation

The CyberData 4-Port PoweredUSB 2.0 Hub is a standard USB Hub that complies with the USB 2.0 specification, and adds PoweredUSB ports. When connected to a Host, it is enumerated as a *Generic USB Hub*. This Hub also meets the PoweredUSB .08g specification. For more information about this specification, go to www.poweredusb.org.

POS peripheral caveat

According to the USB 2.0 specification, devices attached to a USB interface should enumerate from the Hub's USB Vbus, regardless of the PoweredUSB powered ports. Some POS devices do not comply with this specification, and will not enumerate unless the upper sections of the PoweredUSB ports are active.

When running on operating systems such as Windows XP with *no* devices attached (an empty Hub), the operating system turns the Hub off. The operating system does not detect non-compliant peripherals when they are hot-plugged into an empty Hub. Consequently PoweredUSB power is not supplied to the peripheral. In this case, you can restore correct operation as follows.

1. Unplug the Host side connection for five seconds, and then plug it in again.
2. Be sure that at least one USB device is plugged in when the computer is booted, or leaves standby mode.
3. Plug in a standard USB compliant device, such as a mouse or keyboard.
4. Disable the low-power, standby operation. With this configuration, power is always supplied to the PoweredUSB ports regardless of the PC's operational state. For more information, contact CyberData as instructed in Section , "Contact Technical Support".

2.5 Port Electrical Specifications

The CyberData 4-Port PoweredUSB 2.0 Hub adheres to the USB 2.0 electrical specifications as follows:

Standard USB lower A supply

Each lower portion of the PoweredUSB port provides +5V @ 500mA. If more than 500mA are drawn from a port, that port goes into USB over current, the +5 volts is turned off, and the condition is reported to the host according to USB 2.0 specifications.

PoweredUSB supply

The listed maximum currents depend on the selected power supply. Both the +12V and +24V PoweredUSB ports are protected with active over current circuits. If an over current condition occurs, unplug the DC connection, remove the overcurrent condition, and re-cycle the DC connection to the Hub by unplugging it, and then plugging it in again.

- +12V Ports (3) – 1.5A each
- +24V Port (1) – 2.3A

Appendix A: Regulatory and Safety Information

Regulatory standards

FCC Statement: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Safety standards

- UL60950-1; Information Technology Equipment
- CSA C22.2 No. 60950-01, Information Technology Equipment
- EN60950-1, Information Technology Equipment
- IEC60950-1, Information Technology Equipment

EMC

For the USA and Canada, this device complies with:

- Title 47 of the CFR, Part 15, Subpart B, Section 15.107(b)
- Title 47 of the CFR, Part 15, Subpart B, Section 15.109 (b)
- ICES-003

CE Declaration of Conformity

This device complies with:

- Directive 89/336/EEC
- EN55022 Class A 1998
  - EN61000-3-2: 2000
  - EN61000-3-3: 1995
- EN55024: 1998
  - EN61000-4-2: 1995
  - EN 61000-4-3:1996
  - EN 61000-4-4: 1995
  - EN 61000-4-5: 1995
  - EN 61000-4-6: 1996
  - EN 61000-4-8: 1993
  - EN 61000-4-11: 1995

Appendix B: Setting up the Hub on Windows XP

For connecting the CyberData 4-Port PoweredUSB 2.0 Hub to a PC running the Windows XP operating system, keep in mind:

1. Microsoft XP Service Pack 1 or higher must be installed.
2. When connecting the Hub for the first time, it is important to perform the enumeration correctly. A Microsoft XP Service Pack issue does not enumerate and recognize a Hub when no devices are attached to it. To correctly enumerate the CyberData 4-Port PoweredUSB 2.0 Hub, attach a peripheral whose drivers are included in Windows XP, such as a USB mouse, prior to enumerating the Hub. To accomplish this:
    a. Connect a USB mouse to one of the lower, standard USB, Hub ports.
    b. Connect the power cord to the Hub.
    c. With the PC powered up, connect the host control cable from the Hub to a USB port on the PC. Doing so displays the *Found new hardware* dialog, indicating that the PC is searching for drivers for the Hub.
    d. When the PC completes the driver search, it displays the *Found new hardware* dialog, in search of a driver for the mouse. If required, click **Next** in all screens of the wizard to complete the driver selection for the mouse.

At this point, you should be able to plug in and install a USB device provided you have also installed its drivers, or have them available for installation.

Index

R

S

U

W